

**Useful Guidelines:**

To graph a Linear Inequality:

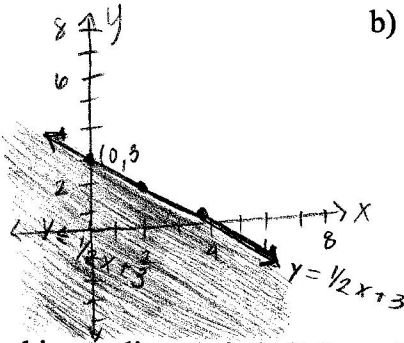
1. Graph the line (make the line solid if the inequalities involves  $\leq$  or  $\geq$ , or make the line dash if inequalities involves  $<$  or  $>$ ).
2. Pick a point not on the line as a test point and substitute the coordinates in the inequality.
3. Shade the side of the line that includes the test point if the test point satisfies the original inequality; otherwise, shade the region on the other side of the boundary line.

1. Graph each linear inequality in two variables. Label all the points.

a)  $x + 2y \leq 6$

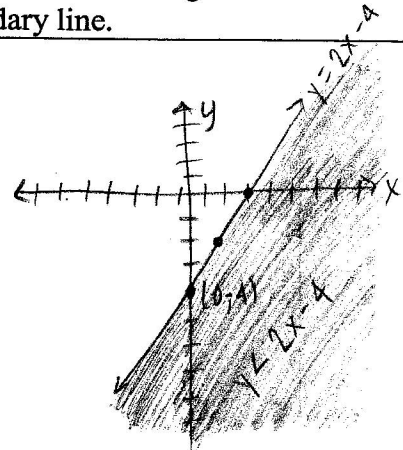
$$\begin{array}{r} x + 2y = 6 \\ -x \quad -x \\ \hline y = \frac{1}{2}x + 3 \end{array}$$

$$y \leq \frac{1}{2}x + 3$$



b)  $-y + 2x > 4$

$$y < 2x - 4$$

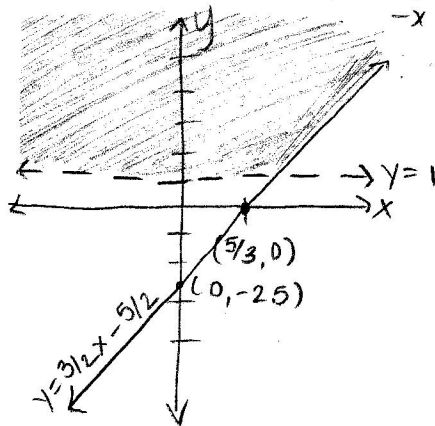


2. Graph each compound inequality. Label all the points.

a)  $3x - 2y \leq 5$  and  $y > 1$

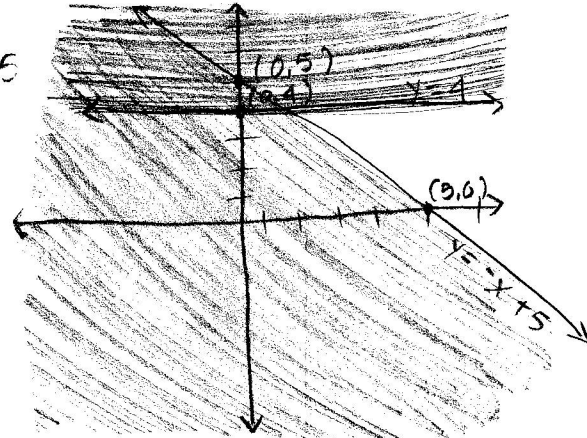
$$\begin{array}{r} -3x \quad -3x \\ -2y \leq -3x + 5 \\ \hline -2 \quad -2 \\ y \geq \frac{3}{2}x - \frac{5}{2} \end{array}$$

$$y \geq \frac{3}{2}x - \frac{5}{2}$$



b)  $x + y \leq 5$  or  $y \geq 4$

$$\begin{array}{r} -x \quad -x \\ y \leq -x + 5 \end{array}$$



3. Bennilyn can be paid in one of two ways for the sales transaction made through her sales promotion counter. She is allowed to choose one of the two compensation plans. Plan A: Salary of \$1800 per month, plus a commission of 10% of the sales. Plan B: Salary of \$2400 per month, plus a commission of 15% of sales in excess of \$16000. For what amount of monthly sales is plan B better than plan A, assuming the counter sales is always more than \$16000.

Plan A = \$1800 per month + 10% sales =  $1800 + .10s$

Plan B = \$2400 per month + 15% sales =  $2400 + .15s$

$$2400 + .15(s - 16000) > 1800 + .10s$$

$$2400 + .15s - 2400 > 1800 + .10s$$

$$\begin{array}{r} .05s > 1800 \\ \hline .05 \quad .05 \end{array}$$

$$s > \$36,000$$